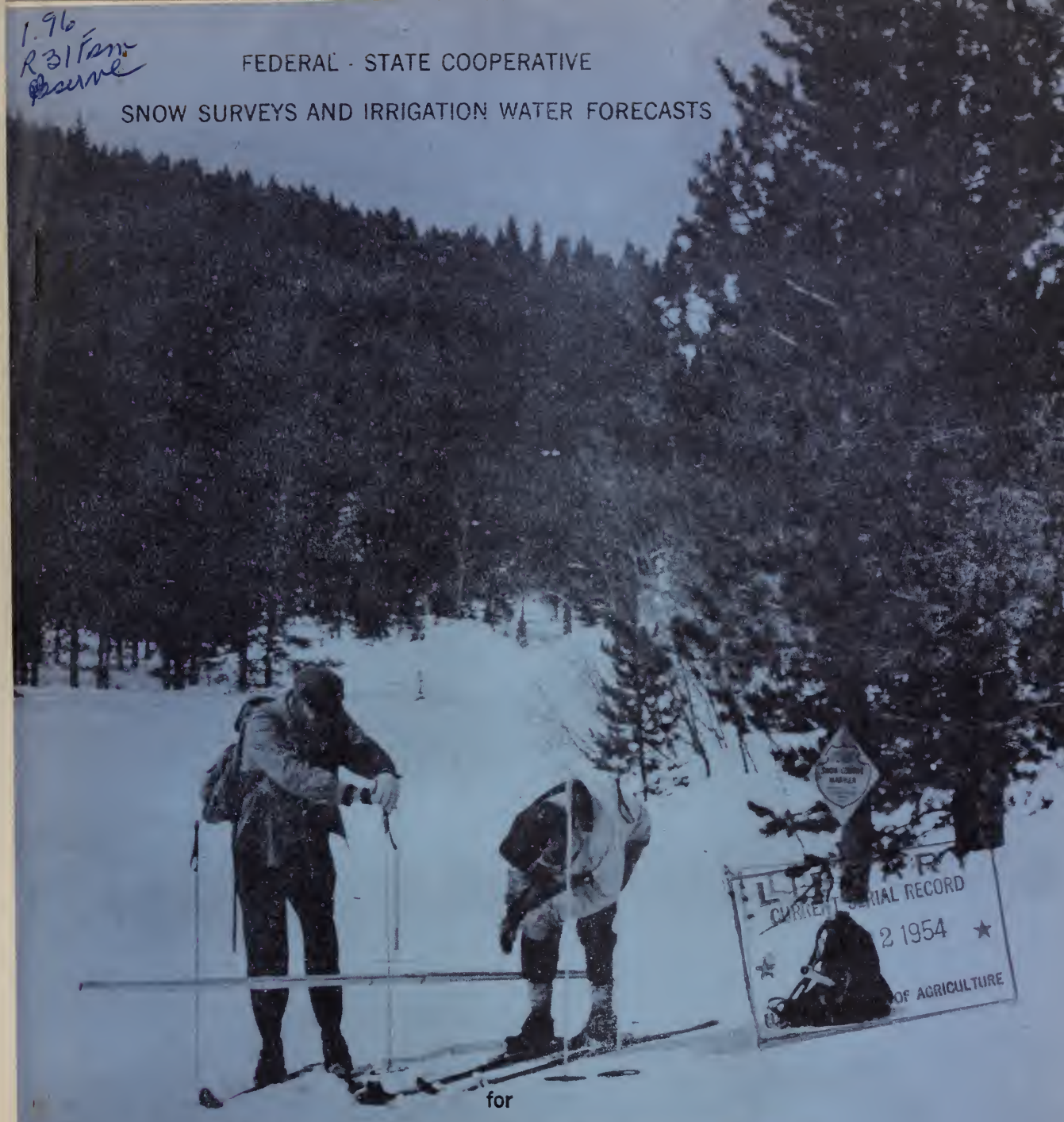
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1.96
R31 Farm
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FEDERAL - STATE COOPERATIVE

SNOW SURVEYS AND IRRIGATION WATER FORECASTS



CURRENT SERIAL RECORD
2 1954
OF AGRICULTURE

for

Platte and Arkansas Drainage Basins

By
Division of Irrigation, Soil Conservation Service
United States Department of Agriculture
and
Colorado Agricultural Experiment Station

Data included in this report were obtained by the agencies named above in cooperation with the U. S. Forest Service, National Park Service, State Engineer of Colorado, Wyoming and New Mexico and other Federal, State and local organizations.

As of
MAR. 1, 1953

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY
AND WATER SUPPLY FORECAST REPORTS:

Forecasts by U. S. Weather Bureau of total annual streamflow October-September, inclusive, at more than 300 gaging stations are issued monthly January through May in the publication WATER SUPPLY FORECASTS FOR THE WESTERN UNITED STATES.

Weather Bureau forecasts of runoff presented in this bulletin are computed from procedures based on mathematical analysis of the relation between precipitation and runoff.

The Weather Bureau bulletins may be secured by writing to:

Hydrologist in Charge
River Forecast Center
U. S. Weather Bureau
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Kansas City 6, Missouri

FEDERAL-STATE COOPERATIVE
SNOW SURVEYS AND IRRIGATION
WATER SUPPLY FORECASTS

FOR

PLATTE-ARKANSAS RIVER BASINS

March 1, 1953

Report Prepared

by

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Division of Irrigation
Soil Conservation Service
Colorado Experiment Station
Fort Collins, Colorado

General Series Paper No. 538
Colorado Agricultural Experiment Station

WATER SUPPLY OUTLOOK
PLATTE-ARKANSAS DRAINAGE BASIN
MARCH 1, 1953

Seasonal snow accumulation on the headwaters of the North and South Platte and Arkansas Rivers is from 75 to 100 percent of normal as of March 1. Stream flow during the 1953 snow-melt season will probably be less than indicated by snow measurements because of the extreme deficiency of precipitation in the high mountain areas during the late summer and fall months, particularly September and October. Snow at medium and lower mountain elevations is much less than normal or non-existent. The summer season runoff on all streams will be much less than for the 1953 season. Soil moisture conditions are reported as fair to poor in much of the irrigated areas with the exceptions of the Sterling district in Colorado and in Nebraska.

CHEYENNE RIVER

Snow cover in the Black Hills of South Dakota is above normal for this date. Precipitation has been deficient for several months at valley elevations and soil moisture conditions are described as poor. Stream flow is below average. Storage in Belle Fourche reservoir is 51,000 acre-feet as compared to 88,500 on March 1, 1952 and well below average.

NORTH PLATTE RIVER

The seasonal snow accumulation to date is definitely in contrast to a year ago. The overall average snow water content is now 94 percent of normal as compared to 150 percent last year on this date. On the Sweetwater river drainage the snow cover is 75 percent of average. The seasonal runoff of the North Platte into Seminoe Reservoir will be reduced by very dry mountain soils regardless of late season snow. As in other areas, precipitation in the late summer and fall months was extremely deficient. There is no snow reported at lower elevations or in the foothills. The irrigation water supply for 1953 below Pathfinder Reservoir is assured because of high carry-over storage made available by relatively heavy stream flow the past four years and especially 1952. The four major reservoirs were near capacity at the peak of the snow melt season, but the irrigation water demand was unusually high all the summer of 1952. Total storage is now 1,600,000 acre-feet which is near that storage last year at this time. Soil moisture conditions are reported as fair to poor on irrigated areas throughout the valley with some improvement noted in western Nebraska. Stream flow is below normal in Colorado and Wyoming and slightly above normal in Nebraska.

On the Laramie river the snow cover is similar to the North Platte with summer runoff expected to be below average. Soil moisture conditions near Laramie and Wheatland are reported as fair to poor. Storage in Wheatland reservoir is 26,000 acre-feet as compared to 54,000 on March 1, 1952.

SOUTH PLATTE

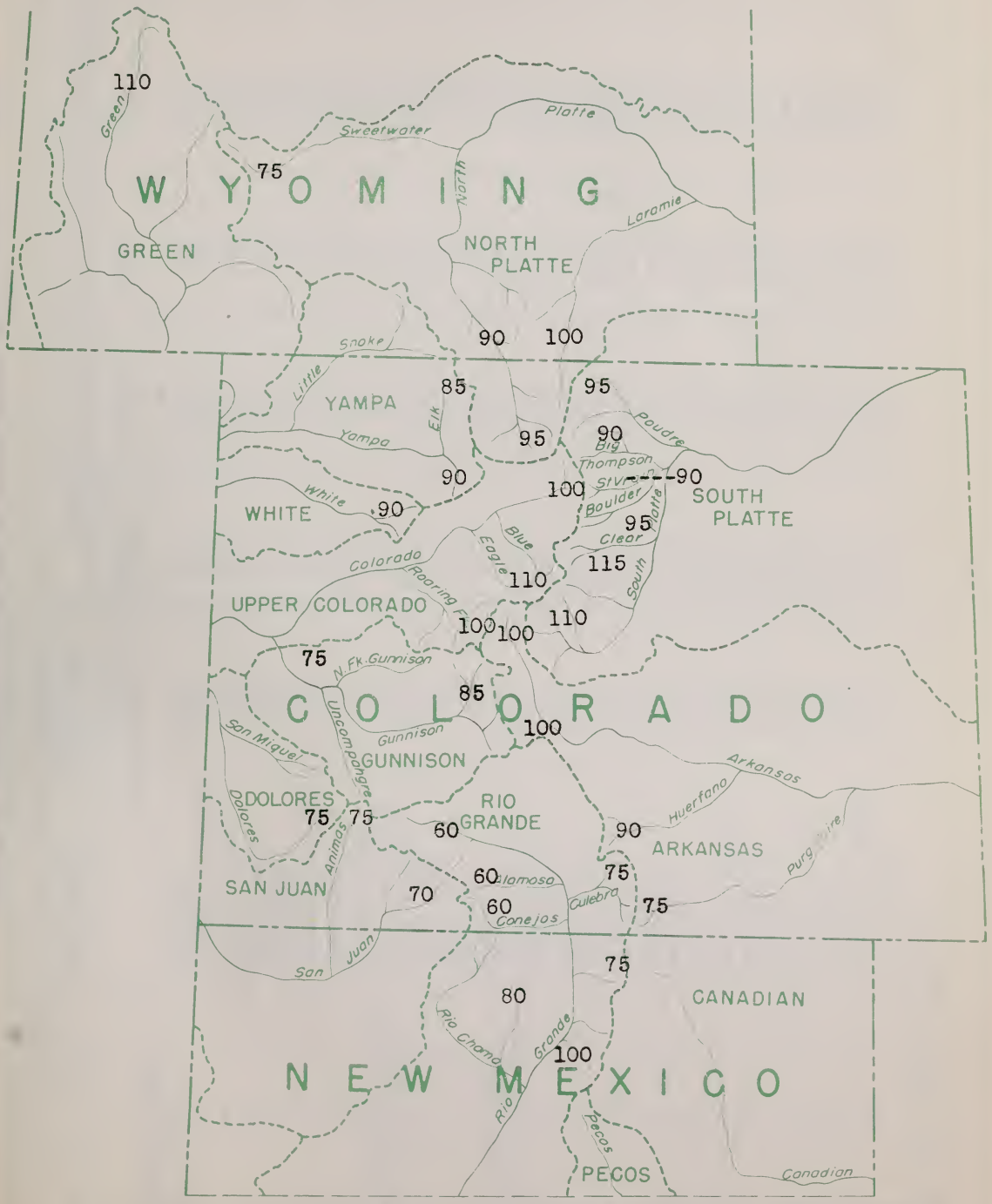
The irrigation water supply outlook for the South Platte and its tributaries is below average as of this date. The snow cover is from 90 to 110 percent of normal at high elevations with no snow in the foothills or valleys. Snow accumulation during February was above average and therefore the water supply outlook is slightly improved over February 1. Snow-melt season stream flow will probably be slightly less than indicated by the snow measurements because of the extremely dry fall months. Precipitation during August, September and October was of practically no value in priming mountain soils. On the Poudre, Thompson and lower South Platte the prospective water shortage will be helped by supplemental water from the Colorado-Big Thompson project. Storage in irrigation reservoirs is below March 1, 1952 and generally below average with a few exceptions. The soil in all irrigated districts is dry except in the Sterling area. Snowfall in valley districts during February was not effective in improving soil moisture conditions.

ARKANSAS RIVER

The snow cover on the Arkansas River watershed is slightly less than normal at high mountain elevations and much less than normal at lower elevations. Mountain soil moisture under the snow is extremely deficient. Summer runoff for 1953 will probably be less than current snow measurements would indicate. Soil moisture conditions are reported as good above Salida but very poor at lower elevations over most of the irrigated areas of the valley. Except for the Twin Lakes reservoirs there is practically no irrigation water storage in the Arkansas Valley. John Martin reservoir is practically empty.

WATER CONTENT OF SNOW ON THE WATERSHEDS OF PLATTE, ARKANSAS, UPPER COLORADO AND RIO GRANDE BASINS BASED ON SNOW SURVEYS MADE APPROXIMATELY FIRST DAY OF MONTH

March 1, 1953



Note: Snow melt season runoff is expected to be less than indicated by percent of normal snow cover because of extremely dry mountain soil moisture.

STATUS OF RESERVOIR STORAGE PLATTE-ARKANSAS BASIN, March 1, 1953

BASIN AND STREAM	RESERVOIR	USABLE CAPACITY (Thous. A.F.)	THOUSANDS ACRE FEET IN STORAGE ABout March 1, 1953				
			1953	1952	1951	1950	10-year Avg.* 1943-1952
MISSOURI RIVER							
Poudre River	Windsor	18.6	9.2	13.3	5.9	11.7	10.1
" "	Cache la Poudre	9.5	6.1	8.7	5.6	7.6	6.8
" "	Fossil Creek	11.6	6.9	11.0	6.4	7.3	7.3
" "	Terry Lake	8.2	4.1	4.2	4.1	4.2	4.2
" "	Halligan	6.4	2.7	4.2	0.0	0.0	1.5
" "	Chamber's Lake	8.8	0.7	2.1	1.7	2.0	2.0
" "	Cobb Lake	34.3	11.2	7.0	5.0	11.3	6.4
" "	Black Hollow	8.0	4.2	3.7	0.7	5.1	3.7
Big Thompson River	Lake Loveland	14.3	7.0	9.3	3.2	5.6	5.3
" " "	Boyd Lake	44.0	16.9	22.6	16.0	26.4	22.6
" " "	Lone Tree	9.2	6.1	8.5	7.2	5.4	5.5
" " "	Mariano	5.4	3.7	4.9	0.2	1.7	2.3
St. Vrain River	Union	12.7	9.1	11.9	3.4	9.0	8.0
South Platte River	Eleven Mile	81.9	81.9	81.9	72.0	81.0	81.1
" " "	Cheeseman	79.0	54.5	31.2	25.7	64.2	55.8
" " "	Marston	18.9	14.5	13.7	9.1	12.2	12.1
" " "	Barr Lake	32.2	18.8	23.3	14.5	25.2	22.5
" " "	Milton	24.4	12.4	16.7	5.2	15.7	12.8
" " "	Standley	18.5	9.8	12.7	6.9	9.2	11.0
" " "	Marshall	10.3	1.2	4.3	1.4	1.5	2.1
" " "	Antero	33.0	10.2	8.6	19.8	21.0	16.7
" " "	Horse Creek	20.6	13.0	12.4	6.5	12.0	10.9
" " "	Riverside	57.5	50.4	56.8	43.5	57.9	48.8
" " "	Empire	37.7	31.2	31.5	29.8	32.8	30.1
" " "	Jackson Lake	35.4	29.5	32.7	32.9	33.8	31.0
" " "	Prewitt	32.8	21.0	28.6	17.8	30.0	24.0
" " "	Point of Rocks	70.0	50.0	68.4	46.6	69.8	57.6
" " "	Julesburg	28.2	21.1	19.5	20.1	20.1	20.3

*Some for shorter periods.

RESERVOIR STORAGE, Cont.

BASIN AND STREAM	RESERVOIR	USABLE CAPACITY (Thous.A.F.)	THOUSANDS ACRE FEET IN STORAGE About March 1, 1953				
			1953	1952	1951	1950	10-year Avg.* 1943-1952
North Platte River	Kingsley	2180.0	1735.0	1842.0	1823.0	1738.0	1318.5
" " "	Minatare	60.8	23.8	31.5	29.0	24.9	22.9
" " "	Alcova	190.0	155.2	158.7	169.9	154.9	95.6
" " "	Seminoe	1025.0	624.5	644.8	562.9	604.0	439.6
" " "	Guernsey	46.0	42.9	32.1	36.8	47.2	38.7
" " "	Pathfinder	1045.5	793.1	794.2	889.6	846.1	517.6
" " "	Sutherland		52.8	58.4	46.0	55.3	52.0
Laramie River	Wheatland	70.4	26.1	53.9	39.4	45.8	40.1
ARKANSAS RIVER							
Arkansas River	Twin Lakes	54.5	25.2	22.2	11.0	22.9	26.8
" "	Sugar Loaf	17.4	5.4	14.0	5.1	6.5	9.2
" "	Clear Creek	11.4	2.0	4.6	0.6	6.8	6.1
" "	Meredith	41.9	0.0	0.0	0.0	6.2	21.5
" "	Horse Creek	26.9	0.0	0.0	0.0	7.0	11.2
" "	Adobe Creek	61.6	0.0	8.0	0.0	29.5	32.7
" "	Cucharas	40.0	0.0	0.1	2.2	4.1	5.8
" "	Two Buttes	40.9	--	28.6	33.0	21.8	11.6
" "	John Martin	655.0	16.9	64.4	79.1	155.3	71.0
" "	Great Plains	150.0	2.4	23.0	46.3	72.0	77.1
Purgatoire River	Model	15.0	1.2	0.7	0.6	0.9	3.0
CHEYENNE RIVER							
Cheyenne River	Belle Fourche	198.1	51.9	88.5	81.4	69.8	115.8
	Angostura	160.0	109.0	112.0	28.5	--	--
COLORADO-BIG THOMPSON							
Blue River	Green Mt.	146.9	99.5	101.5	75.9	101.1	67.4
Colorado River	Granby	467.5	431.2	277.9	--	--	--
Poudre River	Horsetooth	143.5	119.0	71.5	--	--	--

*Some for shorter periods

PLATTE-ARKANSAS DRAINAGE BASINS

SUMMARY OF MARCH 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

WATERSHEDS	Snow Depth 1953 Inches	Snow Water Content in Inches				No. of courses in average	Snow Density 1953 Percent	1953 Water Content in Percent of	
		1953	1952	1951	16 yr. Avg.*			1952	16 yr. avg.*
CHEYENNE RIVER									
Cheyenne River	31.4	7.3	8.4	2.3	5.5	1	23	87	127
PLATTE RIVER									
Sweetwater	30.6	9.1	14.3	14.2	12.2	3	30	64	75
North Platte River	40.4	12.3	18.2	13.5	13.1	14	30	68	94
Laramie River	38.6	11.8	14.4	14.9	11.3	6	31	80	104
South Platte River**	16.4	5.0	7.9	5.8	4.5	3	31	63	111
Poudre River	45.8	14.6	22.4	18.3	15.2	3	32	65	96
Big Thompson River	35.4	10.2	15.6	15.1	11.2	3	29	65	91
St. Vrain River	29.4	7.8	13.4	12.9	8.5	2	27	58	92
Boulder Creek	29.4	10.4	14.0	15.8	10.8	3	35	74	96
Clear Creek	48.0	12.7	18.9	16.2	11.0	3	26	67	115
ARKANSAS RIVER	35.2	9.6	16.5	11.7	10.0	8	27	58	96
COLORADO-BIG THOMPSON									
Colorado River***	42.4	12.2	19.2	16.3	13.3	5	39	64	92
Willow Creek	27.9	7.1	14.9	7.2	8.4	3	25	48	85
Frazer River	31.9	9.8	15.0	13.2	10.2	3	31.	65	96
Blue River	46.8	13.1	20.2	18.6	12.5	4	28	64	105

*Some for shorter periods **Above Denver ***Above Granby

PRECIPITATION DATA*

WATERSHED	STATE	Precipitation October 1 to February 28	Departure from Normal	Precipitation February	Departure from Normal
		Inches	Inches	Inches	Inches
North Platte	Wyoming	3.42	-1.00	1.33	+0.36
South Platte	Colorado	2.42	-1.52	0.62	-0.11
Arkansas	Colorado	2.55	-1.24	0.75	-0.07

*Average selected high elevation stations

PLATTE-ARKANSAS RIVERS SNOW SURVEYS
March 1, 1953

Drainage Basin and Snow Course	No. and State	Elev.	Date of Survey	Snow Cover Measurements: Snow Depth	Water Content 1953	Water Content 1952	Water Content 1951	Past Record: Yrs Record	Past Record: Av. Water Content
				In.	In.	In.	In.		In.
CHEYENNE RIVER									
Upper Spearfish	1 S. Dak.	6500	2/27	31.4	7.3	8.4	2.3	9	5.5
SWEETWATER RIVER									
Grannier Meadows	29 Wyo.	9000	3/2	37.0	11.1	16.6	13.5	16	11.5
South Pass*	47 "	9000	3/1	39.0	12.3	16.8	13.5	13	11.3
Larson Creek	57 "	9000	2/23	15.8	4.0	9.5	15.7	4	13.9
Average for drainage				30.6	9.1	14.3	14.2		12.2
NO. PLATTE RIVER									
Cameron Pass	1 Colo.	10300	2/24	51.0	15.9	23.6	16.4	16	16.4
Park View	7 "	9200	2/24	27.1	6.5	14.2	6.3	17	7.9
Columbine Lodge	8 "	9300	2/25	59.1	19.2	27.7	25.8	17	18.8
Willow Cr.Pass*	62 "	9500	2/24	33.8	9.2	20.4	10.3	15	10.4
Northgate	136 "	8500	2/23	21.8	5.0	7.5	5.3	3	6.0
Bottle Creek	7 Wyo	8200	2/27	36.2	11.7	17.8	10.8	15	11.3
Webber Spring	8 "	9000	2/27	42.1	13.4	23.1	15.5	15	14.8
Old Battle	9 "	9800	2/27	58.1	20.2	35.6	25.7	16	26.0
N.French Creek	37 "	10200	2/24	57.0	18.8	28.2	25.9	15	23.4
N.Barrett Creek	38 "	9400	2/24	48.0	14.4	18.5	15.6	16	14.3
Ryan Park	39 "	8400	2/24	28.0	8.7	11.8	8.9	16	8.7
Spring Creek	67 "	9000	--	--	--	19.9	11.2	4	17.0
Albany	68 "	9400	2/28	42.0	13.0	15.1	15.7	4	14.0
La Bonte	69 "	8450	2/28	23.5	6.2	6.3	5.0	4	8.5
Boxelder	70 "	9000	2/24	37.6	9.5	5.2	2.3	3	3.4
Pearl	71 "	8900	--	--	--	10.4	5.0	2	--
Average for drainage				40.4	12.3	18.2	13.5		13.1
PLATTE RIVER									
LARAMIE RIVER									
Roach	88 Colo.	9800	--	--	--	22.2	17.3	13	15.1
McIntyre	111 "	9100	2/23	30.2	7.8	13.4	10.7	4	11.1
Brooklyn Lake	3 Wyo.	10200	3/2	64.8	22.6	25.6	26.4	16	19.5
Fox Park	11 "	9200	3/1	20.5	6.3	7.6	8.0	16	5.9
Pole Mtn. #2*	34 "	8700	--	--	--	6.2	2.6	16	4.1
Libby Lodge	35 "	8700	3/2	36.0	10.0	13.0	13.4	15	8.3
Hairpin Turn	36 "	9500	3/2	38.3	11.1	13.6	15.2	15	9.2
Albany	68 "	9400	2/28	42.0	13.0	15.1	15.7	4	14.0
Average for drainage				38.6	11.8	14.7	14.9		11.3
POUDRE RIVER									
Cameron Pass	1 Colo.	10300	2/24	51.0	15.9	23.5	16.4	16	16.4
Chambers Lake	2 "	9000	--	--	--	9.2	10.3	16	6.9
Big South	3 "	8600	--	--	--	1.8	3.1	15	2.1
Deadman H ill	50 "	10200	2/24	30.0	9.5	17.1	13.2	16	11.3
Lake Irene*	65 "	10600	2/28	56.4	18.4	26.5	25.3	15	17.8
Hour Glass Lake	68 "	9500	--	--	--	8.4	8.9	13	6.0
Red Feather	128 "	9000	--	--	--	817	6.8	4	8.2
Lost Lake	156 "	9300	--	--	--	13.3	12.6	2	---
Average for drainage				45.8	14.6	22.4	18.3		15.2

PLATTE-LARAMIE RIVERS NEW SURVEYS
March 1, 1923

Stockyards Supply and Dairy Course	Miles	Time at Junction	Depth	Water Velocity 1/10 Depth	3/10 Depth	7/10 Depth	Mean Velocity	Area	Discharge Cubic Feet per Second
Cheyenne Creek	1	1:30 p.m.	2.4	2.1	1.8	1.4			2.0
Upper Cheyenne	2	2:00 p.m.	3.1	2.8	2.5	2.0			2.5
Cheyenne Lake	3	2:30 p.m.	4.2	3.9	3.6	3.1			3.6
Cheyenne Creek	4	3:00 p.m.	3.8	3.5	3.2	2.8			3.2
Cheyenne Creek	5	3:30 p.m.	3.5	3.2	2.9	2.5			2.9
Cheyenne Creek	6	4:00 p.m.	3.2	2.9	2.6	2.2			2.6
Cheyenne Creek	7	4:30 p.m.	2.9	2.6	2.3	1.9			2.3
Cheyenne Creek	8	5:00 p.m.	2.6	2.3	2.0	1.6			2.0
Cheyenne Creek	9	5:30 p.m.	2.3	2.0	1.7	1.3			1.7
Cheyenne Creek	10	6:00 p.m.	2.0	1.7	1.4	1.0			1.4
Cheyenne Creek	11	6:30 p.m.	1.7	1.4	1.1	0.7			1.1
Cheyenne Creek	12	7:00 p.m.	1.4	1.1	0.8	0.4			0.8
Cheyenne Creek	13	7:30 p.m.	1.1	0.8	0.5	0.1			0.5
Cheyenne Creek	14	8:00 p.m.	0.8	0.5	0.2	0.0			0.2
Cheyenne Creek	15	8:30 p.m.	0.5	0.2	0.0	0.0			0.1
Cheyenne Creek	16	9:00 p.m.	0.2	0.0	0.0	0.0			0.0
Cheyenne Creek	17	9:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	18	10:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	19	10:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	20	11:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	21	11:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	22	12:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	23	12:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	24	1:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	25	1:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	26	2:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	27	2:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	28	3:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	29	3:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	30	4:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	31	4:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	32	5:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	33	5:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	34	6:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	35	6:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	36	7:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	37	7:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	38	8:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	39	8:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	40	9:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	41	9:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	42	10:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	43	10:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	44	11:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	45	11:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	46	12:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	47	12:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	48	1:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	49	1:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	50	2:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	51	2:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	52	3:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	53	3:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	54	4:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	55	4:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	56	5:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	57	5:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	58	6:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	59	6:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	60	7:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	61	7:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	62	8:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	63	8:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	64	9:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	65	9:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	66	10:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	67	10:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	68	11:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	69	11:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	70	12:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	71	12:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	72	1:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	73	1:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	74	2:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	75	2:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	76	3:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	77	3:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	78	4:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	79	4:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	80	5:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	81	5:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	82	6:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	83	6:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	84	7:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	85	7:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	86	8:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	87	8:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	88	9:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	89	9:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	90	10:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	91	10:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	92	11:00 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	93	11:30 a.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	94	12:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	95	12:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	96	1:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	97	1:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	98	2:00 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	99	2:30 p.m.	0.0	0.0	0.0	0.0			0.0
Cheyenne Creek	100	3:00 p.m.	0.0	0.0	0.0	0.0			0.0

PLATTE-ARKANSAS RIVERS SNOW SURVEYS
March 1, 1953

Drainage Basin and Snow Course	No. and State	Elev.	Date of Survey	Snow Cover Measurements: Snow Depth	Water Content: 1953	Water Content: 1952	Water Content: 1951	Past Record: Yr. Record	Past Record: Av. Water Content
BIG THOMPSON RIVER				In.	In.	In.	In.		In.
Lake Irene*	65 Colo.	10600	3/1	56.4	18.4	26.5	25.3	15	17.8
Hidden Valley	95 "	9550	3/1	32.2	8.1	13.6	12.6	12	9.4
Deer Ridge	115 "	9050	3/1	17.5	4.2	6.6	7.4	4	6.5
Longs Peak	148 "	10500	3/1	28.7	7.0	14.1	17.9	2	--
Average for drainage				35.4	10.2	15.6	15.1		11.2
ST. VRAIN RIVER									
Wild Basin	41 "	10000	3/2	40.5	10.8	19.1	18.2	16	10.8
Copeland Lake	116 "	8600	3/2	18.3	4.8	7.7	7.5	4	6.2
Ward	134 "	9500	--	--	--	6.8	11.5	3	7.1
Average for drainage				29.4	7.8	13.4	12.9		8.5
BOULDER CREEK									
E.Port.Moffat T.	5 Colo.	9400	3/1	13.1	3.6	5.6	6.0	16	3.8
University Camp	60 "	10300	2.27	51.1	20.2	22.0	26.0	15	16.7
Moffat	133 "	9400	3/1	23.9	7.3	14.5	15.4	3	12.0
Boulder Falls	162 "	10000	2/27	40.4	12.3	16.5	--	2	--
Average for drainage				29.4	10.4	14.0	15.8		10.8
CLEAR CREEK									
Loveland Pass	61 "	10600	2/28	47.1	15.2	21.0	17.7	16	11.0
Grizzly Peak*	97 "	11250	2/28	55.9	15.9	25.9	21.9	11	15.2
Empire	117 "	9650	2/26	27.1	7.1	9.9	9.0	4.	6.7
Berthoud Falls	137 "	10500	2/26	46.3	13.7	16.6	13.4	2	--
Clear Creek	159 "	11200	2/28	42.0	13.1	20.6	--	2	--
Average for drainage				48.0	12.7	18.9	16.2		11.0
SOUTH PLATTE RIVER									
Hoosier Pass	14 Colo.	11400	2/27	35.4	10.8	15.5	14.1	16	9.0
Fairplay	15 "	10000	2/27	7.8	2.8	2.3	1.8	15	1.0
Jefferson Cr.	83 "	10100	--	--	--	11.7	11.9	14	6.4
Geneva Park	118 "	9750	--	--	--	6.9	7.2	4	5.6
Antero	120 "	9200	2/26	6.0	1.4	6.0	1.4	4	3.4
Average for drainage				16.4	5.0	7.9	5.8		4.3
			ARKANSAS RIVER						
ARKANSAS RIVER									
Tennessee Pass	19 Colo.	10200	2/28	33.3	7.6	13.1	11.6	17	7.7
Twin Lakes T.	21 "	10500	3/2	26.8	7.6	12.7	13.3	15	8.9
Whiskey Creek	72 "	10300	2/27	12.1	3.9	12.5	1.4	15	5.4
La Veta Pass*	74 "	9300	2/27	32.2	8.9	18.0	4.6	15	7.8
4-Mile Park	78 "	9700	2/28	16.8	3.0	6.6	6.3	14	3.4
Fremont Pass	79 "	11400	2/23	47.5	12.2	19.6	19.8	17	13.0
Monarch Pass	92 "	10500	2/26	57.3	16.5	24.7	16.5	11	14.5
Timberline	121 "	11100	3/1	55.5	17.1	25.0	20.0	4	19.1
Average for drainage				35.2	9.6	16.5	11.7		10.0

*On adjacent drainage

PLATTE-ARKANSAS RIVERS SNOW SURVEYS
March 1, 1953

Drainage Bacin and Snow Course	No. and State	Elev.	Date of Survey	Snow Cover Measurements: Snow Depth	Water Content 1953	Water Content 1952	Water Content 1951	Past Record: Yrs. Record	Past Record: Av. Water Content
				In.	In.	In.	In.		In.
COLORADO - BIG THOMPSON PROJECT									
COLORADO RIVER**									
Cameron Pass*	1 Colo.	10300	2/24	51.0	15.9	23.6	16.4	16	16.4
Phantom Valley	12 "	9300	2/25	32.8	9.3	14.8	12.7	17	9.0
Lulu	59 "	10200	2/28	43.0	11.2	18.0	18.5	15	14.0
N.Inlet Grand L.	64 "	9000	--	--	--	12.8	9.4	15	7.8
Lake Irene	65 "	10600	2/28	56.4	18.4	26.5	25.3	15	17.8
Grand Lake	127 "	8600	3/1	29.0	6.3	13.0	8.8	4	9.3
Average for Drainage				42.4	12.2	19.2	16.3		13.3
WILLOW CREEK									
Park View*	7 Colo.	9200	2/24	27.1	6.5	14.2	6.3	17	7.9
Willow Creek	62 "	9500	2/24	33.8	9.2	20.4	10.3	15	10.4
Granby	113 "	8700	2/24	22.8	5.6	10.1	5.0	4	6.8
Average for drainage				27.9	7.1	14.9	7.2		8.4
FRAZER RIVER									
Berthoud Pass	16 Colo.	9700	2/27	32.1	12.3	17.2	15.5	17	12.5
Arrow	69 "	9900	2/27	29.4	7.7	12.0	10.2	15	8.1
Lapland	70 "	9500	3/5	33.8	9.3	15.9	14.0	13	9.9
Berthoud Summit	138 "	11300	2/26	49.5	15.1	21.3	14.8	2	--
Frazer View	139 "	10600	2/26	35.3	10.1	14.4	13.1	2	--
Average for drainage				31.9	9.8	15.0	13.2		10.2
BLUE RIVER									
Hoosier Pass	14 Colo.	11400	2/27	35.4	10.8	15.5	14.1	16	9.0
Fremont Pass	79 "	11400	2/23	47.5	12.2	19.6	19.8	17	13.0
Shrine Pass	96 "	10500	2/23	48.5	13.4	19.6	18.7	11	13.9
Grizzly Peak	97 "	11250	2/28	55.9	15.9	25.9	21.9	11	15.2
Frisco	146 "	9300	2/23	28.7	7.0	10.2	11.4	2	--
Snake River	147 "	9700	2/28	29.5	7.7	11.4	13.9	2	--
Summit Ranch	158 "	10000	2/28	22.2	5.1	14.6	11.3	2	--
Average for drainage				46.8	13.1	20.2	18.6		12.5

*On adjacent drainage
**Above Granby Reservoir

Table IV. Average Rainfall, Snow Surface,
June 1, 1923

Drainage Basin and Gage Station	Area, Sq. Mi.	Mean Elev., Ft.	Rainfall, Inches	Water Content of Snow, Inches			Total Precipitation, Inches		Run-off, Acre-Feet
				1924	1923	1922	1924	Percent of Normal	
Clarion River Basin—									
Cameron Mines	1 [illegible]	1800	6.04	5.40	7.95	5.40	11.44	84	16.8
Penwood Valley	10 "	1900	6.76	5.76	7.63	5.40	12.16	89	9.0
Wells	22 "	1250	5.86	5.04	7.20	4.32	10.18	75	11.0
Bridge Creek No.	64 "	2100	--	--	--	--	6.00	44	7.0
Lake Creek	86 "	2050	6.20	5.04	7.84	5.04	11.24	82	17.8
Grand Lake	117 "	1900	6.12	4.32	6.48	4.32	10.44	77	9.4
Average for Drainage			6.00	5.04	7.52	4.80	11.04	81	13.4
Clear Creek—									
Clear Creek	1 [illegible]	1700	6.28	5.04	6.48	4.32	10.32	76	1.9
Hilltop Creek	14 "	1900	6.24	5.04	6.48	4.32	10.28	75	10.1
Cherokee	123 "	1700	5.76	4.32	5.76	3.60	9.36	69	5.0
Average for Drainage			6.08	4.80	6.48	4.08	10.16	74	17.0
Pleasant Valley—									
Deerhorn Pass	11 [illegible]	2700	6.24	5.04	6.84	4.68	11.88	87	17.8
Aspen	69 "	2900	6.32	5.04	7.92	5.04	12.96	95	6.1
Lapland	73 "	3200	6.48	5.76	8.28	5.76	13.92	102	1.9
Overlook Divide	138 "	12,200	6.48	5.76	7.92	5.04	13.44	98	--
Pleasant Lake	139 "	11,800	6.36	5.76	7.92	5.04	13.32	98	--
Average for Drainage			6.36	5.76	7.92	5.04	13.32	98	--
Blue Lake—									
Upper Dora	11 Calc.	11,000	6.24	4.68	6.48	4.32	10.92	80	7.0
Emerald Area	19 "	11,400	6.24	4.68	6.48	4.32	10.92	80	1.0
Skyline Area	30 "	12,000	6.24	4.68	6.48	4.32	10.92	80	1.0
Original Peak	37 "	11,500	6.24	4.68	6.48	4.32	10.92	80	15.0
Triplets	126 "	11,400	6.24	4.68	6.48	4.32	10.92	80	--
Snow Queen	127 "	11,700	6.24	4.68	6.48	4.32	10.92	80	--
Snowdrift Ranch	130 "	11,000	6.24	4.68	6.48	4.32	10.92	80	--
Average for Drainage			6.24	4.68	6.48	4.32	10.92	80	15.0

Mean Seasonal Extremes
Average Seasonal Deficiency

LIST AND LOCATION OF SNOW COURSES

Platte, Arkansas, Colorado
and Rio Grande Drainages

No.		Name	Sec.	Twp.	Rge.	Elev.
		Cheyenne				
1	SD	Upper Spearfish	21	3N	1E	6500
		North Platte				
7	C	Park View	24	5N	78W	9200
8	C	Columbine	21	5N	82W	9300
156	C	Northgate	7	11N	79W	8500
7	W	Bottle Creek	24	14N	85W	8200
8	W	Webber Spring	27	14N	85W	9000
9	W	Old Battle	29	14N	85W	9800
37	W	North French Creek	27	16N	80W	10200
38	W	North Barrett Creek	30	16N	80W	9400
39	W	Ryan Park	34	16N	81W	8400
67	W	Spring Creek	32	15N	85W	9000
68	W	Albany	18	14N	78W	9400
71	W	Pearl	18	12N	82W	8900
		Laramie				
88	C	Roach	5	10N	77W	9800
111	C	McIntyre	35	10N	76W	9100
3	W	Brooklyn Lake	11	16N	78W	10200
11	W	Foxpark	21	13N	78W	9200
35	W	Libby Lodge	29	16N	78W	8700
36	W	Hairpin Turn	24	16N	79W	9500
		Sweetwater				
29	W	Grannier Meadows	19	30N	100W	9000
47	W	South Pass	13	30N	101W	9000
57	W	Larson Creek	12	30N	105W	9000
		Laramie Peaks District				
39	W	La Bonte	11	27N	74W	8450
70	W	Boxelder	31	30N	75W	9000
		South Platte				
1	C	Cameron Pass	2	6N	76W	10300
2	C	Chambers Lake	6	7N	75W	9000
3	C	Big South	33	8N	75W	8600
5	C	East Portal	2	2S	74W	9400
14	C	Hoosier Pass	13	8S	78W	11400
15	C	Fairplay	33	9S	77W	10000
41	C	Wild Basin	24	3N	74W	10000
50	C	Deadman Hill	26	10N	75W	10200
60	C	University Camp	26	1N	73W	10300
61	C	Loveland Pass	27	4S	76W	10600
68	C	Hour Glass Lake	18	7N	73W	9500
83	C	Jefferson Creek	14	7S	76W	10100
95	C	Hidden Valley	23	5N	75W	9550
115	C	Deer Ridge	19	5N	73W	9050
116	C	Copeland Lake	21	3N	73W	8600
117	C	Empire	21	3S	75W	9650
118	C	Geneva Park	18	6S	74W	9750
120	C	Antero	1	13S	77W	9200
128	C	Red Feather	26	10N	74W	9000
133	C	Moffatt	2	2S	74W	9400
134	C	Ward	1	1N	73W	9500
137	C	Berthoud Falls	16	3S	75W	10500
148	C	Longs Peak	32	4N	73W	10500
156	C	Lost Lake	32	8N	75W	9300
34	C	Pole Mountain	35	15N	72W	8700
		Arkansas River				
19	C	Tennessee Pass	21	8S	80W	10200
21	C	Twin Lakes Tunnel	22	11S	82W	10500
72	C	Whiskey Creek		37.2N	105W	10300
74	C	La Veta Pass	22	28S	70W	9300
78	C	Four Mile Park	23	11S	81W	9700
81	C	Blue Lakes	30	31S	69W	10000
92	C	Monarch Pass	16	49N	6E	10500
119	C	Saint Elmo	31	15S	80W	10600
121	C	Timberline	8	9S	81W	11100
165	C	Cooper Hill	2	8S	80W	10600
166	C	East Fork	9	8S	79W	10700

No.		Name	Sec.	Twp.	Rge.	Elev.
		Upper Colorado				
12	C	Phantom Valley	7	5N	75W	9300
16	C	Berthoud Pass	35	2S	75W	9700
37	C	M. F. Camp Ground	16	3S	77W	9000
44	C	Fiddler Gulch	1	8S	80W	11000
59	C	Lulu	25	6N	76W	10200
64	C	N. Inlet Grand Lake	26	4N	75W	9000
65	C	Lake Irene	8	5N	75W	10600
69	C	Arrow	34	1S	75W	9900
70	C	Lapland	16	2S	76W	9500
79	C	Fremont Pass	2	8S	76W	11400
91	C	Lynx Pass	27	2N	88W	9100
96	C	Shrine Pass	15	6S	79W	10500
97	C	Grizzly Peak	2	5S	76W	11250
102	C	Glen-Mar Ranch	31	2S	77W	8850
106	C	Monarch Lake	30	2N	74W	8500
112	C	Granby	11	2N	77W	8700
127	C	Grand Lake	36	4N	75W	8600
138	C	Berthoud Summit	10	2S	75W	11300
139	C	Frazer View	34	2S	75W	10600
143	C	Gore Pass	2	1N	82W	8900
146	C	Frisco	16	6S	78W	9300
147	C	Snake River	9	5S	76W	9700
158	C	Summit Ranch	8	4S	78W	10000
163	C	Vail Pass	28	5S	79W	10000
167	C	Kokomo	23	7S	79W	10600
168	C	Pando	10	7S	80W	9600
		Roaring Fork				
33	C	Ind. Pass Tunnel	30	11S	82W	10700
34	C	North Lost Trail	20	11S	87W	9200
45	C	Nast	1	9S	83W	8700
100	C	Ivanhoe	12	9S	82W	10400
144	C	Ruby	1	12S	83W	11500
		Yampa				
6	C	Dry Lake	26	7N	84W	8500
9	C	Elk River	21	5N	82W	9500
140	C	Routt Line	13	5N	86W	8700
141	C	Rabbit Ears	30	5N	86W	9550
142	C	Yampa View	21	5N	84W	8500
		White				
35	C	Burro Mountain	15	2S	91W	9000
36	C	Rio Blanco	28	1N	88W	8500
		Plateau Creek				
56	C	Mesa Lakes	35	11S	96W	10000
85	C	Trickle Divide	23	11S	94W	10000
		Gunnison River				
18	C	Crested Butte	22	13S	86W	9000
46	C	Park Cone	19	14S	82W	9700
53	C	Alexander Lake	2	12S	25W	10000
55	C	Snowshoe Mesa	14	13S	89W	7500
58	C	Ironton Park	29	43N	7W	9800
87	C	Park Reservoir	34	11S	94W	9500
89	C	Porphyry Creek	19	49N	6E	10800
101	C	Kannah Creek	5	12S	95W	10700
104	C	Lake City	13	43N	4W	10300
152	C	McClure Pass	1	11S	89W	9500
155	C	Red Mountain	13	42N	8W	11000
		San Juan				
29	C	Upper San Juan	10	37N	1E	10000
30	C	Silverton	10	41N	7W	9400
31	C	Cascade	12	39N	9W	8850
135	C	La Plata	4	36N	11W	9700
149	C	Spud Mountain	32	40N	8W	10700
150	C	Molas Lake	7	40N	7W	10500
151	C	Howardville	15	41N	7W	9800
162	C	Mineral Creek	36	42N	8W	10300

LIST AND LOCATION OF SNOW COURSES (CONTINUED)

No.		Name	Sec.	Twp.	Rge.	Elev.
		Dolores				
23	C	Rico	11	39N	11W	8700
24	C	Telluride	6	42N	8W	8600
25	C	Lizzard Head	24	41N	10W	10300
114	C	Trout Lake	8	41N	9W	9700
		Green				
23	W	Dutch Joe	33	31N	104W	8700
24	W	Mulligan Park	17	35N	108W	8900
25	W	Kendall R. S.	23	38N	110W	7900
26	W	Loomis Park	14	37W	111W	8500
27	W	Snyder Basin	15	29N	114W	8040
28	W	Piney La Barge	19	29N	114W	8820
		Arizona (Gila)				
11	NM	Frisco Divide	21	6S	20W	8000
14	NM	State Line	5	6S	21W	8000
22	NM	Taylor Creek	20	10S	10W	7850
23	NM	Inman	6	11S	10W	7800
1	A	Nutrioso	23	6N	30E	8500
2	A	Beaver Head	13	4N	30E	8000
3	A	Coronado Trail	26	5N	30E	8000
29	A	Rose Canyon	15	12S	16E	7300
30	A	Bear Wallow	6	12S	16E	8100
		Arizona (Salt)				
4	A	McNary	14	8N	23E	7200
5	A	Forest Dale	2	9N	21E	6000
6	A	Milk Ranch	28	8N	23E	7000
20	A	Pacheta				7800
21	A	Fort Apache	18	7N	27E	9000
22	A	Baldy	28	7N	27E	9000
23	A	Maverick Fork	13	6N	27E	9050
31	A	Workman Creek	33	6N	14E	5860
		Arizona (Little Colorado)				
12	A	Fort Valley	22	22N	6E	7350
13	A	Mormon Lake	13	18N	8E	7350
19	A	Mormon Mountain	14	18N	8E	7500
		Arizona (Verde)				
8	A	Camp Wood	3	16N	6W	5700
16	A	Antelope Park	29	19N	8E	7300
17	A	Casner Park	19	18N	8E	6930
18	A	Munds Park	7	18N	7E	6500

No.		Name	Sec.	Twp.	Rge.	Elev.
		Arizona (Williams)				
7	A	Iron Springs	22	14N	3W	6000
15	A	Willow Ranch	16	21N	11W	5000
		Arizona (Lower Colorado)				
9	A	Chalendar	27	22N	3E	7100
10	A	Grand Canyon	21	30N	4E	7500
11	A	Bright Angel	34	33N	4E	8400
		Rio Grande				
26	C	Wolf Creek	4	37N	2E	10000
27	C	Upper Rio Grande	13	40N	4W	9350
47	C	Silver Lakes	15	36N	5E	9600
49	C	River Springs	25	33N	6E	9300
76	C	Summitville	30	37N	4E	11500
77	C	Cumbres Pass	17	32N	5E	10000
80	C	Santa Maria	8	41N	2W	9700
82	C	Culebra		37.2N	105.2W	10000
84	C	Fort Garland	13	29N	72W	8200
108	C	Platoro	22	36N	4W	9950
109	C	West Conejos	25	35N	4E	9450
110	C	La Manga	11	33N	5E	10000
122	C	Pyramid	26	41N	5W	10300
123	C	Spring Creek Pass	2	42N	3W	10900
124	C	Pool Table Mt.	19	41N	2E	10000
125	C	Lake Humphrey	32	40N	1E	9300
126	C	Cochetopa Pass	12	45N	3E	10000
154	C	Porcupine	2	41N	3W	10400
155	C	Wolf Creek Summit	6	37N	2E	11000
1	NM	Red River	29	28N	15E	9500
2	NM	Taos Canyon	10	25N	15E	9000
4	NM	Aspen Grove	12	18N	10E	9100
9	NM	Hematite Park	8	28N	15E	9500
12	NM	Tres Ritos	23	22N	13E	9000
15	NM	Payrole	16	28N	7E	9700
17	NM	Chama Divide		36.9N	106.7W	7750
18	NM	Chamita		36.9N	106.7W	8500
19	NM	Cordova	22	22N	13E	10100
20	NM	Panohuela	27	19N	12E	8300
21	NM	Big Tesuque	17	18N	11E	10000
24	NM	Elk Cabin	8	18N	11E	8250
26	NM	Rio En Medio	8	18N	11E	10400
28	NM	Quemazon	34	20N	5E	9300
29	NM	Bateman	5	26N	6E	9300
31	NM	Fenton Hill	18	19N	3W	8900

SD - South Dakota; C - Colorado; W - Wyoming; A - Arizona; NM - New Mexico

Federal - State - Private

COOPERATIVE SNOW SURVEYS

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Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"